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COMMERCIAL FERTILIZERS.

By GEORGE ROBERTS.

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COMMERCIAL FERTILIZERS.

BY GEORGE ROBERTS.*

This report gives the results of fertilizer inspection work for the second half of the fiscal year 1905-06, the results of the first half-year having been published in Bulletin No. 173. A list of the registered dealers was given in Bulletin No. 173 and will not be repeated.

From January 1 to June 30, 1906, 239 samples of registered fertilizers and fertilizing materials have been received at the laboratory. Of this number, 22 were sent by farmers under the two-dollar fee provision, 56 were taken by inspectors from purchasers' goods upon the request of the purchasers, and 161 were taken by inspectors from goods in the hands of agents and manufacturers. During the first half-year 138 registered samples were received and analyzed, making a total of 377 samples for the year.

The following classification may be made of samples reported in this bulletin:

Complete fertilizers.....	121
Bone meal.....	27
Tankage	42
Nitrogenous superphosphate.....	1
Superphosphate and potash.....	4
Superphosphate	1
Thomas phosphate powder.....	7
Dried blood.....	14
Nitrate of soda.....	14
Bird guano.....	1
Sulfate of potash.....	7
Total	239

DEFICIENCIES.

In the analyses of the above samples, the following number of deficiencies greater than allowed by law occur:

Available phosphoric acid (total when available is not guaranteed) .	19
Total nitrogen.....	35
Potash	20
In valuation	11

These deficiencies were found in 67 samples.

The fertilizer law allows a deficiency of 0.25 per cent in nitrogen, 0.50 per cent in potash, and 1.00 per cent in available phosphoric acid.

* The writer is much indebted to Mr. Ludwig Rosenstein, assistant in the Fertilizer Control Laboratory, for his faithful and very accurate work.

INSPECTION SERVICE.

Beginning with July 1, 1905, the plan was adopted of placing resident sampling agents in those localities in which the sales of fertilizers were large enough to justify the action. Accordingly Mr. A. C. Pickett of Riverside was appointed sampling agent for southern California, with headquarters at Riverside. His instructions were to make two general inspections a year—one immediately following July 1st, and the other immediately following January 1st. He was directed to sample all goods found in the hands of agents and dealers, and also to sample goods in the hands of purchasers upon their request. In addition to these duties he was instructed to keep himself posted on the shipment of fertilizers in his section and to go and sample them whenever the distance would permit, or the amount of goods justify the trip. He was also instructed to sample goods upon request of purchasers at all times when distance and quantity of goods would justify the work. Notice of this plan was printed in a large number of papers in southern California. To illustrate the effectiveness of the plan the following figures are given :

From July 1, 1905, to June 30, 1906, Mr. Pickett took 305 samples. What was done from January 1 to June 30 will probably better represent the effectiveness of the plan, for the reason that it was probably not generally known until this time, and also that this is the period of greatest sales. During these six months Mr. Pickett took 202 samples, 56 of which were taken upon the request of purchasers.

This plan of inspection has proven so satisfactory that it will be introduced in other localities whenever the sales are large enough to justify the step.

Some of the farmers in this section bought their fertilizers subject to settlement upon basis of Fertilizer Control analyses and called upon Mr. Pickett to sample the goods. This is a good practice, and when agreed upon by dealer and purchaser, the Fertilizer Control will be glad to render prompt service in the matter of analyses.

The above plan does not interfere with farmers sending their own samples under the two-dollar fee provision of the law. Samples sent by farmers with the fee will receive first attention, those taken by inspectors from purchasers' goods next, and then those taken from stocks of dealers.

A WORD ABOUT BUYING FERTILIZERS.

There is one reform that is much needed in the purchase of fertilizers, and that is a change from the almost universal practice of buying on the flat ton rate. When fertilizers are bought on this basis, farmers often pay practically the same price for different fertilizers whose compositions necessarily make their commercial values vary consider-

ably, and one may rest assured that he pays too much for the brand of lower value instead of too little for the brand of higher value. The brand or name stands for what the manufacturer thinks is best suited for the crop for which the brand is intended, or else it stands for what the manufacturer wishes the farmer to think is best suited for his crop, in order that the manufacturer may dispose of, at best advantage to himself, fertilizing materials on which he has a corner, or which he can procure on more favorable terms than others. It is too often the case that the immediate financial returns influence the agent's theory of fertilization. Thus it is that some dealers will declare that experience has definitely settled it that organic nitrogen from animal sources is best for most, if not all, crops, and these are the dealers who are directly or indirectly interested in the packing industries. On the other hand, some are very positive that nitrate of soda should be the source of the greater part of the nitrogen, and investigation might disclose the fact that nitrogen in nitrate of soda is the cheapest form for this class of manufacturers. Some will declare with authority that superphosphate made from phosphate rock is superior to superphosphate made from bone, and *vice versa* (when there is no difference), and one does not have to look very far to find that each party is interested in the material which he advocates. Still others will say that non-acidulated bone is the best form of phosphoric acid, and it would not be surprising to find that the dealer in this class finds greater profit in handling untreated bone, or else that he is not prepared to acidulate his materials.

It is not intended to discuss here what materials are best suited for various crops under various conditions, but to suggest to the buyers of fertilizers that they should know what they want and then go to the fertilizer dealer to supply their wants. In short, it is intended to suggest to the farmer the advantages of buying fertilizing ingredients at a *definite price per unit*, instead of buying "brands" of fertilizers on the flat ton basis. The fertilizing ingredients may be bought in the unmixed materials, or they may be bought mixed in proportions which seem best suited to the farmer's need, but in either case the transaction should be on the unit basis. A unit of a fertilizing ingredient is *one per cent* in a ton. Thus if nitrate of soda contains $15\frac{1}{2}$ per cent of nitrogen, one ton contains $15\frac{1}{2}$ units of nitrogen. In other words, the figures that are used in expressing the guaranteed analysis express the number of units in a ton of the material.

Buying fertilizers on the unit basis means that the dealer must state how much he is charging per unit for available and insoluble phosphoric acid, or if he does not guarantee available and insoluble phosphoric acid, how much he is charging per unit for total phosphoric acid: how much per unit for each form of nitrogen, and how much per unit for potash. This then puts the purchase of fertilizers strictly on

a competitive basis, and the buyer is at once able to say who is giving him plant food at the lowest price. It does away with all hidden virtues which lurk in the "so much per ton" mixed fertilizers. Of course throughout the transaction the farmer must not lose sight of the quality of the materials used and the mechanical condition of the fertilizer.

This basis of purchase also affords a just basis of settlement in case goods do not come up to guaranty. If the fertilizer has fallen short in one or more ingredients it is a simple matter of arithmetic to arrive at what should be paid for the goods on the basis of the agreed price. The farmer should never forget that he is buying and using pounds of nitrogen, phosphoric acid, and potash, and not tons of "fertilizer."

It is not sufficient for the dealer to quote a price per ton and say that this price is made up on a reasonable price per unit for the ingredients. The price per unit for each ingredient should be given.

If farmers would stand together in demanding this basis of dealing, it would be a very easy matter to obtain it. If the manufacturer objects to this plan, the farmer may remind him that it is the basis on which he buys his own materials. If it is good for the manufacturer, why is it not good for the farmer?

The question is often asked, Is it better to buy mixed fertilizers, or to buy the materials and mix them on the farm? The answer is very simple. If the manufacturer mixes them better and cheaper than the farmer can mix them, then buy them mixed. The question of cost of mixing can be determined by getting the cost of ingredients in the unmixed materials and in the ready-mixed fertilizers.

All the materials which enter into the mixed fertilizers may be bought unmixed in the market. But in buying the unmixed materials care should always be exercised to obtain them in a finely ground condition. In mixing them, the bulkiest material should be placed in an even layer upon a tight floor, the others above this in order of bulk, then begin at one end and shovel the pile back. Repeat the operation once or twice, or until the materials are well mixed.

THE FERTILIZER LAW.

The text of the California fertilizer law is given in Bulletin No. 171, which will be sent free to applicants as long as the issue lasts.

ANALYSES FOR CONSUMERS.*

Any user of fertilizers may, by paying the fee of two dollars specified by Section 4 of the fertilizer law, have a sample of his material analyzed.

* Considerable matter which has appeared in former reports is repeated in this bulletin for the reason that it is considered important to keep it before the attention of the farmers.

This fee is not to be regarded as paying the cost of the analysis. It is a nominal charge made to prevent the sending of samples through curiosity, as is always the case when analyses are made free of charge.

The sample should be drawn from not less than ten packages, if the lot is five tons or less; if the lot is over five tons, the sample should be drawn from not less than twenty packages. The larger the number of packages sampled, the more representative the sample will be. The sample drawn as specified above should be thoroughly mixed, great care being exercised to prevent the separation of coarse and fine materials. Not less than one quart should be taken from this sample, to be sent to the Station for analysis. Whenever possible the sampling should be done in the presence of the agent, who should sign, as a witness, the certificate given below. If the sample is not drawn in the presence of the agent, it should be drawn in the presence of some other person, who should sign the certificate as a witness.

Samples for consumers will be given preference in the laboratory and the results will be reported as soon as possible. The sample should be sent, if possible, in time to receive the report before the fertilizer is used, in order that recourse may be had to the original packages in case of controversy with the manufacturer.

The form of certificate given below should be used in sending samples for analysis. Blank forms will be furnished upon application. All samples should be marked in some way so that they may be identified. Samples should be sent prepaid, addressed to the Fertilizer Control, Experiment Station, Berkeley, and should bear the name and address of the sender. Bank checks and money orders should be made payable to "The Regents of the University of California." Letters, certificates, and remittances should not be enclosed with the samples, but mailed separately. When the report of analysis is received, a tag or label taken from one of the bags sampled should at once be sent to the Station, and the name and address of the agent from whom the goods were purchased should be given. Analyses will be made only for those who purchase fertilizers for their own use. Any one refusing to send a tag or label as specified above will be excluded from further privileges under the above provisions.

CERTIFICATE FOR CONSUMER'S ANALYSIS.

*Director Agricultural Experiment Station, University of California,
Berkeley, California.*

This is to certify that I am not a dealer in, or agent for the sale of any fertilizer, and that the fertilizer, a sample of which I have sent you for analysis, was purchased by me....., 190., for my own use and not for sale.

I further certify that the amount purchased was.....tons and that the sample was drawn from.....packages and was thoroughly mixed.

Upon receipt of the analysis from you, I agree to furnish you with a tag or label taken from one of the packages sampled, and the name and address of the firm or agent of whom the fertilizer was purchased. I enclose two dollars analysis fee.

(Signature).....

(P. O. Address).....

(Date).....

(Signature of Witness)

.....

VALUATION OF FERTILIZERS.

The "agricultural value" and the "commercial value" of fertilizing materials are not synonymous terms. The agricultural value of a fertilizer is determined by the increase and quality produced by it in the crop. The commercial value of a fertilizer is determined by the cost of the materials which enter into its composition. A fertilizing material of high commercial value may have a low agricultural value on a particular soil or crop. On another soil or crop the same material may have a high agricultural value.

In calculating the values given in this report, the Experiment Station does not undertake to say what the retail prices of fertilizers should be in this State. The values given are for the amounts of the unmixed raw materials of good quality represented by the analyses, and do not take into account the cost of grinding, mixing, bagging, insurance, drayage, agent's commission, and other expenses of the manufacturer. Hence the valuations in this report are generally lower than the retail prices of fertilizers. The schedule of values used is given below. They represents, as nearly as can be determined, the prices at which fertilizing ingredients in raw materials of good quality can be bought at retail for cash at the warehouses in our largest markets like San Francisco. It is a difficult matter to get quotations on fertilizing materials in our market that agree closely enough to serve as a basis for a schedule that represents the actual market conditions. Taken as a whole, it is believed that the schedule used is fairly close to the market conditions.

The estimation of values is not without its use, even if the schedule used does not represent the actual market conditions. In the first place, a comparison of values calculated upon the guaranty and the analysis shows whether the goods have the commercial value represented by the guaranteed analysis. In the second place, the calculation of values upon different guaranteed analyses enables the purchaser to determine which dealer offers him plant food at the lowest price; provided, of course, that the materials offered are of the same quality.

In reading the report of analyses, the column of values is the last one to be considered. The first things to consider are the materials used and the analysis as compared with the guaranty. From the very

nature of the case the analysis must differ somewhat from the guaranty, but the variation should not be so great as to change the nature of the fertilizer. Such a variation might take place, and at the same time the value calculated upon the guaranty be greater than the value calculated upon the analysis. Suppose, for example, that a fertilizer should be guaranteed to have the composition indicated by the first column below, and upon analysis it should show the composition indicated by the second column.

	Guaranteed.	Found.
Available phosphoric acid.....	8 per cent.	10 per cent.
Insoluble phosphoric acid.....	2 “	2 “
Total phosphoric acid.....	10 “	12 “
Nitrogen	3 “	3 “
Potash	5 “	3 “

According to the schedule of values now in use these two compositions would have the same commercial value, yet they are essentially different. Such variations as the above are sometimes met with.

SCHEDULE OF TRADE VALUES.

Phosphoric Acid.

	Cents per Pound.	Value per Unit.
Available (water- and citrate-soluble).....	6	\$1 20
Insoluble in mixed fertilizers.....	2½	0 50
Insoluble in plain acid phosphate.....	0	0 00
In fine* bone and tankage.....	4½ †	0 90
In medium* bone and tankage.....	3½ †	0 70
In fine* Thomas phosphate powder.....	5 †	1 00
In medium* Thomas phosphate powder.....	3 †	0 60

Nitrogen.

In ammonia salts.....	18	3 60
In nitrates.....	16½	3 30
Organic in—		
Blood	18½	3 70
Mixed fertilizers.....	18	3 60
Fine* bone and tankage.....	18 †	3 60
Medium* bone and tankage.....	14 †	2 80

Potash.

From sulfate.....	6	1 20
From muriate.....	5	1 00

To calculate the value per ton of a fertilizer, multiply the pound value of each ingredient by 20, then multiply these products by the percentages of the several ingredients, and add the results.

* Fine and medium bone are separated by a sieve with 50 meshes to the inch; fine and medium tankage by a 25-mesh sieve; and fine and medium Thomas phosphate powder by a 100-mesh sieve.

† For the purpose of calculating comparative values an average value of 4 cents per pound for phosphoric acid and 17 cents for nitrogen is used on bone meal and tankage; an average of 4½ cents per pound is used for phosphoric acid in Thomas phosphate powder.

For example:

	Value, per lb.		Analysis per cent.	
Available phosphoric acid.....	6 cents	× 20	× 8.00	= \$9 60
Insoluble phosphoric acid.....	2½ "	× 20	× 2.00	= 1 00
Total phosphoric acid.....				10.00
Nitrogen in nitrates.....	16½ cents	× 20	× 1.50	= 4 95
Organic nitrogen.....	18 "	× 20	× 2.50	= 9 00
Total nitrogen.....				4.00
Potash from sulfate.....	6 cents	× 20	× 4.00	= 4 80
Value per ton.....				\$29 35

Or multiply the unit value given in the schedule of values by the percentage of the ingredient, and add the products.

IMPORTANT.

Caution to Purchasers of Fertilizers.

Farmers are requested not to purchase fertilizers that are not labeled to meet the requirements of law, and not to attempt to purchase them from any one but registered dealers or their authorized agents. Any farmer who purchases fertilizers under any other conditions does not deserve the protection of the law, and the manufacturer or dealer who does not label his goods according to the full requirements of the law is liable to prosecution and should in no wise be patronized by farmers. It is quite liable to happen and does happen that now and then a manufacturer may miss his guaranty without intending to do so, but it is impossible that he would have his labels printed in non-conformity to the law without doing so either intentionally or through gross carelessness. Farmers can render great assistance in enforcing the law by observing the above caution.

Every bag or package of fertilizer and fertilizing material, whether a regular brand or a special mixture, should carry a label or tag bearing the following:

1. Name and address of manufacturer and place of manufacture.
2. Registration number.
3. Name or brand of fertilizer.
4. Guaranteed analysis, giving percentage of

Available phosphoric acid;	Nitrogen in ammonia salts;
Insoluble phosphoric acid;	Potash.
Total phosphoric acid.	Total nitrogen.
Nitrogen in nitrates;	Organic nitrogen;

 Or such of these ingredients as may be present.
5. A statement of the materials from which the above ingredients are derived.

In case of bone meal, tankage, and Thomas phosphate powder, a guaranty of available phosphoric acid is not required when these materials are not acidulated.

No dealer or manufacturer, except those who have certificates of registration from the University of California, and their authorized agents, can legally sell fertilizers in this State. No person or com-

pany has any right to use any registration number except in connection with the firm name to which the registration certificate of such number has been issued; and no person or company to whom a registration number has been assigned has any right to give any other person or company permission to use said registration number, and any number so used is a fraud. No agent has any right to use his principal's registration number in connection with his own name.

REPORT OF ANALYSES.

The following tables give the results of all analyses made from January 1 to June 30, 1906.

Available phosphoric acid is not determined in bone meal, tankage, and Thomas phosphate powder, unless requested. The fineness of these materials is determined, fine and medium bone being separated by a sieve of 50 meshes to the inch; tankage by a 25-mesh sieve; and Thomas phosphate powder by a 100-mesh sieve.

Some fertilizers containing all three ingredients are rated as tankage, because they are non-acidulated tankage products with potash salts added, and do not carry a guaranty of available phosphoric acid.

Nitrogen in ammonia salts will, in some cases, be found reported when nitrogen in this form is not guaranteed. In some of such cases this form of nitrogen is produced by conversion of organic nitrogen during process of manufacture, and is not to be considered a deviation from guaranty of materials used. This form is not reported separately when less than 0.20 per cent, unless it has been guaranteed, but is included in the total. Guanos carry more or less nitrogen in nitrates and ammonia salts, and when any appreciable quantity of guano is used the manufacturer should take into account the fact that some nitrogen will show as nitrates and ammonia salts. The failure to take this into consideration may perhaps account for the appearance of these forms of nitrogen in some samples in which only organic nitrogen was guaranteed.

The percentage of chlorin is given when it exceeds 0.50 per cent. It is a matter of only technical interest whether chlorin present is from muriate of potash, kainit, or from common salt that may be in some of the materials used. If a manufacturer uses sulfate of potash and uses a tankage with it containing a large amount of chlorin, from a practical standpoint he has lowered the grade of his fertilizer just as much as if he had used muriate of potash instead of sulfate of potash. Chlorin from all other sources is as objectionable as from muriate of potash. However, if muriate of potash is found when sulfate is guaranteed, the fact will be published.

The following abbreviations are used in the tables: Bl = blood; Bn = bone; Fs = fish; G = guano; Super = superphosphate; T = tankage.

Guaranties are entered in *italics*. Deficiencies greater than allowed by law are entered in bold type.

ANALYSES AND VALUATIONS.

Laboratory Number	NAME AND ADDRESS OF MANUFACTURER OR DEALER, AND NAME OF BRAND.	FROM WHOM OBTAINED.	Value per Ton at Station Prices
	Agricultural Chemical Works, Los Angeles, Cal.		
610*	Blood and bone (Tankage)	T. G. Otis, Pomona	\$25.60
624*	do	Thomas Moffatt, Rialto	26.09
637*	do	E. A. Moore, Redlands	25.08
	Guaranteed		26.50
680	Pure Blood Meal	Manufacturers	50.76
	Guaranteed		49.95
638*	Fine Ground Bone	E. A. Moore, Redlands	30.21
	Guaranteed		27.80
687*	Fine Ground Bone	Upland Feed and Fuel Co., Upland	30.63
	Guaranteed		26.10
598*	Guano Phosphate	J. S. Kuns, Covina	24.60
648*	do	J. H. Payne, Upland	30.25
649*	do	P. W. Strong, Upland	29.82
650*	do	W. S. McGiffert, Covina	29.96
	Guaranteed		32.35
591*	Nitrate of Soda	E. A. Moore, Redlands	46.33
592	do	Thomas Moffatt, Rialto	51.05
663	do	E. A. Moore, Redlands	51.81
664	do	E. A. Moore, Redlands	51.61
	Guaranteed		51.15
639	No. 1 Orange and Lemon	E. A. Moore, Redlands	30.05
698	do	Upland Feed and Fuel Co., Upland	29.35
792	do	T. E. Ketcheson, Upland	26.22
	Guaranteed		28.60
611	Special Orange and Lemon Fertilizer	A. C. Pickett, Riverside	26.09
	Guaranteed		25.70
701	Special	Upland Feed and Fuel Co., Upland	26.80
	Guaranteed		23.85
788	Special Orange and Lemon Fertilizer	B. K. Braut, Upland	28.30
	Guaranteed		29.70
588	Special Orange and Lemon Fertilizer	A. L. Wright, Rialto	26.35
	Guaranteed		24.92
640	Special Orange and Lemon for Heavy Soils	E. A. Moore, Redlands	28.03
	Guaranteed		23.30
625	Special Orange and Lemon for Light Soils	Thos. Moffatt, Rialto	28.35
699	do	Manufacturers, Los Angeles	26.25
	Guaranteed		23.50
641	Riverside Special Orange and Lemon	E. A. Moore, Redlands	26.49
	Guaranteed		25.60
642	Riverside Special Orange and Lemon	E. A. Moore, Redlands	26.08
700	do	Upland Feed and Fuel Co., Upland	27.84
	Guaranteed		26.20
583	Sulfate of Potash	James Moffatt, Rialto	58.75
	Guaranteed		60.00
	American Agricultural Chemical Co., Los Angeles, Cal.		
653	Acid Phosphate	G. W. Joslin, North Pomona	26.90
	Guaranteed		19.20
626	Bradley's Fruit and Vine	Mrs. M. E. Wallace, Rialto	26.28
	Guaranteed		24.66
643	Bradley's Lawn	Graham-Cope Com'l Co., Redlands	26.48
645	do	Pacific Wood and Coal Co., San Diego	27.33
	Guaranteed		27.11

*610—79 per cent fine.
 *624—78 per cent fine.
 *637—75 per cent fine.
 *638—30 per cent fine.
 *687—34 per cent fine.

*598—Some dried blood.
 *648—Considerable dried blood.
 *649—Considerable dried blood.
 *650—Some dried blood.
 *591—Chlorin excessive.

ANALYSES AND VALUATIONS.

POUNDS PER HUNDRED.

Laboratory Number.	PHOSPHORIC ACID.			NITROGEN.					POTASH.			Chlorin	
	Available	Insoluble	Total	Guaranteed as Derived From	In Nitrates	In Ammonia Salts	Organic	Organic Nitrogen Guaranteed as Derived From	Total	From Muriate	From Sulfate		Total
610			15.13				3.97		3.97				0.76
624			14.09				4.36		4.36				0.60
637			13.16				4.28		4.28				0.68
			14.00				4.50		4.50				
680							13.72		13.72				
							13.50		13.50				
638			20.13				4.15		4.15				
			22.00				3.00		3.00				
687			20.47				4.19		4.19				
			22.00				2.50		2.50				
598	9.09	1.35	10.44		1.59	0.28	0.57		2.44		3.92		
648	12.40	1.99	14.39		0.38	0.19	2.11		2.68		4.03		
649	13.65	2.39	16.04		0.75	0.17	1.15		2.07		4.19		
650	12.53	1.53	14.06		0.43	0.50	1.69		2.62		4.05		
	14.00	4.00	18.00				2.50		2.50		4.00		
591					14.04				14.04				5.79*
592					15.47				15.47				0.74
663					15.70				15.70				
664					15.64				15.64				
					15.50				15.50				
639	5.77	4.43	10.00		0.78		3.35		4.13		5.23		0.70
698	6.25	3.59	9.84		1.48		2.37		3.85		5.54		
792	5.54	2.60	8.14		1.63		2.09		3.74		4.48		
	5.00	5.00	10.00	Bn, T Super	1.00		3.00	Bl, Bn, T	4.00		5.00		
611	5.98	3.97	9.95		1.44		2.63		4.07		2.26		0.84
	6.00	4.00	10.00	Bn, T Super	1.00		3.00	Bl, Bn, T, G	4.00		2.00		
701	8.23	3.37	11.60		0.97		2.30		3.27		3.13		
	7.50	4.50	12.00	Bn, T Super			2.50	Bl, Bn, T	2.50		3.00		
788	6.69	5.19	11.88		1.85		1.94		3.79		3.82		1.24
	4.00	9.00	13.00	Bn			4.00	Bl, Bn	4.00		5.00		
588	9.31	1.11	10.42				3.43		3.43		2.47		
	9.00	1.00	10.00	Bn, T Super			3.30	Bl, Bn, T	3.30		2.00		
640	7.80	3.06	10.86		1.22		2.48		3.70		3.49		0.60
	6.00	4.00	10.00	Bn, T Super	1.00		2.00	Bl, Bn, T	3.00		3.00		
625	10.11	1.21	11.32		1.16		1.91		3.07		4.09		0.70
699	5.86	2.02	7.88		1.49		1.81		3.30		5.64		
	6.00	2.00	8.00	Bn, T Super	1.00		2.00	Bl, Bn, T	3.00		4.00		
641	7.33	5.29	12.62		0.80		2.91		3.71		3.28		0.60
	5.00	5.00	10.00	Bn, T Super	3.00		1.00	Bl, Bn, T	4.00		3.00		
642	5.91	4.55	10.46		0.47		3.23		3.70		2.95		
700	7.05	3.18	10.23		1.18		2.65		3.83		3.63		
	5.00	5.00	10.00	Bn, T Super	1.00		3.00	Bl, Bn, T	4.00		3.00		
583											48.96		1.96
											50.00		
653	22.42	0.80	23.22										
	16.00												
626	7.25	2.14	9.39		2.27	0.14	0.65		3.06		5.15		0.60
	7.00	1.00	8.00		2.25		0.65		2.90		5.00		
643	8.62	2.60	11.22		2.75	0.13	0.98		3.86		1.47		
645	9.07	1.39	10.46		2.64	0.25	1.11		4.00		1.78		
	9.00	1.00	10.00		2.50	0.30	1.30		4.10		1.50		

ANALYSES AND VALUATIONS—Continued.

Laboratory Number	NAME AND ADDRESS OF MANUFACTURER OR DEALER, AND NAME OF BRAND.	FROM WHOM OBTAINED.	Value per Ton at Station Prices
	American Agricultural Chemical Co., Los Angeles, Cal.—Continued.		
599	Bradley's Nursery Stock	Geo. S. Gay, Craftonville	27.49
627	do	Mrs. M. E. Wallace, Rialto	27.40
644	do	S. H. Barrett, East Highlands	28.67
646	do	Graham-Cope Com'cial Co., Redlands	28.22
702	do	Pacific Wood and Coal Co., San Diego	27.11
703	do	W. R. Powell, Glendora	27.06
704	do	W. L. Hale, Fullerton	27.45
706	do	W. A. Johnstone, San Dimas	28.10
707	do	E. C. Robinson, Pomona	28.14
	Guaranteed		27.11
705	Bradley's Nursery Stock	R. H. Hill, Fernando	28.60
708	do	J. F. Munro, Upland	28.36
	Guaranteed		27.17
628	Bradley's Orange and Lemon	Mrs. M. E. Wallace, Rialto	28.41
647	do	Graham-Cope Com'cial Co., Redlands	28.26
709	do	Pacific Wood and Coal Co., San Diego	27.07
710	do	W. R. Powell, Glendora	28.58
711	do	W. W. Blanchard, Santa Paula	28.48
	Guaranteed		26.20
712	Bradley's Orange and Lemon	J. F. Munro, Upland	27.39
	Guaranteed		26.42
665	Nitrate of Soda	Pacific Wood and Coal Co., San Diego	52.00
	Guaranteed		52.14
	Armour Fertilizer Works, Los Angeles, Cal.		
579	Armour's Dried Blood	Factory, Colton	51.02
612	do	Fitz, Gerald and Barry, Pasadena	47.92
	Guaranteed		48.10
655	Armour's Dried Blood	J. W. Freeman, Redlands	52.35
	Guaranteed		51.80
713	Armour's Bone, Blood, and Potash	F. L. Palmer, North Pomona	33.12
714	do	G. W. Russell, Ontario	34.18
715	do	Factory, Colton	34.81
	Guaranteed		32.95
791	Armour's Bone, Blood, and Potash	T. E. Ketcheson, Upland	33.36
	Guaranteed		32.80
694*	Armour's Bone Floats	W. H. Brown, Los Angeles	29.02
	Guaranteed		27.70
566*	Armour's Bone Meal	Arlington H'ghts Fruit Co., Riverside	29.97
567*	do	Arlington H'ghts Fruit Co., Riverside	29.68
568*	do	Arlington H'ghts Fruit Co., Riverside	29.82
577*	do	Arlington H'ghts Fruit Co., Riverside	29.45
	Guaranteed		28.31
589*	Armour's Bone Meal	J. W. Freeman, Redlands	29.83
629*	do	J. C. Boyd, Rialto	29.90
	Guaranteed		27.70
613*	Armour's Bone Meal	Fitz, Gerald and Barry, Pasadena	30.62
690*	do	G. W. Russell, Ontario	29.43
	Guaranteed		27.80
691*	Armour's Bone Meal	Blake Bros., Pasadena	30.14
	Guaranteed		24.50
692*	Armour's Bone Meal	J. W. Freeman, Redlands	32.01
	Guaranteed		32.00
693*	Armour's Bone Meal	W. H. Brown, Los Angeles	30.32
	Guaranteed		26.20

*694—98 per cent fine.

*566—66 per cent fine.

*567—67 per cent fine.

*568—63 per cent fine.

*577—67 per cent fine.

*589—70 per cent fine.

*629—67 per cent fine.

*613—61 per cent fine.

*690—58 per cent fine.

*691—60 per cent fine.

*692—66 per cent fine.

*693—70 per cent fine.

ANALYSES AND VALUATIONS—Continued.

Laboratory Number	POUNDS PER HUNDRED.											Chlorin	
	PHOSPHORIC ACID.				NITROGEN.					POTASH.			
	Available	Insoluble	Total	Guaranteed as Derived From	In Nitrates	In Ammonia Salts	Organic	Organic Nitrogen Guaranteed as Derived From	Total	From Muriate	From Sulfate		Total
599	9.38	1.34	10.72		2.93	0.08	1.04		4.05		1.56		
627	9.40	1.52	10.92		2.82	0.32	1.07		4.21		1.72		0.54
644	9.44	1.29	10.73		2.76	0.30	1.16		4.22		1.95		
646	9.33	1.39	10.72		2.71	0.31	1.14		4.16		1.81		
702	9.21	1.43	10.64		2.43	0.33	1.06		3.82		1.93		
703	9.29	1.75	11.04		2.51	0.39	0.85		3.75		1.91		
704	9.45	1.42	10.87		2.63	0.32	0.91		3.86		1.91		
706	9.33	1.35	10.68		2.67	0.24	1.21		4.12		1.83		
707	9.57	1.43	11.00		2.73	0.29	0.97		3.99		1.99		
705	9.00	1.00	10.00		2.50	0.30	1.30		4.10		1.50		
708	9.35	0.88	10.23		2.28	0.33	1.56		4.17		2.18		
628	9.04	1.07	10.11		2.52	0.35	1.41		4.28		1.93		
647	9.00	1.00	10.00		2.30	0.40	1.40		4.10		1.50		
709	10.31	0.40	10.71		2.68		0.85		3.53		3.28		0.52
710	9.52	1.22	10.74		2.84		0.84		3.68		3.20		
711	8.86	1.22	10.08		2.43		1.31		3.74		2.57		
712	8.92	1.70	10.62		3.08		0.82		3.90		3.26		
665	9.77	0.97	10.74		2.87		0.80		3.67		3.26		
	8.00	1.00	9.00		2.75		0.95		3.70		3.00		
	8.44	1.56	10.00		2.43	0.31	0.94		3.68		3.30		
	8.00	1.00	9.00		2.00	0.40	1.30		3.70		3.00		
					15.76				15.76				
					15.80				15.80				
579							13.79		13.79				
612							12.95		12.95				
655							13.00		13.00				
							14.15		14.15				
							14.00		14.00				
713	8.96	1.40	10.36		1.75		2.24		3.99		6.52		0.62
714	9.37	0.85	10.22		1.89		2.07		3.96		7.35		0.54
715	8.96	0.69	9.65		1.87		2.34		4.21		7.60		0.58
791	8.00	2.00	10.00		1.50		2.50		4.00		7.00		
694	8.63	0.87	9.50		2.22		2.08		4.30		6.45		
	8.00	2.00	10.00		2.00		2.00		4.00		7.00		
566			24.58				2.87		2.87				
567			24.00				2.50		2.50				
568			21.95				3.65		3.65				
577			21.97				3.56		3.56				
			20.82				3.87		3.87				
			22.15				3.45		3.45				
			22.00				3.15		3.15				
589			23.27				3.30		3.30				
629			23.40				3.29		3.29				
			24.00				2.50		2.50				
613			21.41				3.97		3.97				
690			24.37				2.92		2.92				
			22.00				3.00		3.00				
691			25.01				2.98		2.98				
			20.00				2.50		2.50				
692			22.71				4.07		4.07				
			23.00				4.00		4.00				
693			22.94				3.52		3.52				
			20.00				3.00		3.00				

All samples of complete fertilizer of this company bone and acid phosphate.

All samples of complete fertilizer of this company Bl, Bn, T, Pat G, Fs

ANALYSES AND VALUATIONS—Continued.

Laboratory Number	NAME AND ADDRESS OF MANUFACTURER OR DEALER, AND NAME OF BRAND.	FROM WHOM OBTAINED.	Value per Ton at Station Prices
	Armour Fertilizer Works, Los Angeles, Cal.—Continued.		
716	Armour's Spl. Flower and Fern Food Guaranteed	W. H. Brown, Los Angeles	30.34 31.78
717	Armour's Fruit Special Guaranteed	Griffin & Skelley, Fresno	23.74 21.87
718	Armour's Lawn and Garden	R. T. Murrell, North Pomona	24.96
719	do	W. H. Brown, Los Angeles	25.41
720	do Guaranteed	Blake Bros., Pasadena	23.66 24.05
590	Armour's Nitrate of Soda	J. W. Freeman, Redlands	51.87
666	do	J. W. Freeman, Redlands	51.35
667	do	A. M. Seely, Covina	51.29
668	do Guaranteed	R. T. Murrell, North Pomona	51.35 49.50
593	Armour's Orange Tree Manure	Manufacturers, Colton	27.76
594	do	J. W. Freeman, Redlands	27.78
630	do	J. C. Boyd, Rialto	29.13
721	do	R. T. Murrell, North Pomona	27.73
722	do Guaranteed	G. W. Russell, Ontario	27.78 25.75
631	Armour's Pea Special	J. C. Boyd, Rialto	32.25
723	do	A. M. Seely, Covina	29.67
724	do Guaranteed	G. W. Russell, Ontario	26.79 25.10
603	Armour's Special 5-8-2	Geo. S. Gay, Craftonville	28.25
615	do	J. W. Henderson, Claremont	28.08
618	do	Factory, Colton	27.59
636	do	Ernest Richter, San Dimas	28.76
725	do	J. S. Edwards, East Highlands	29.19
727	do	J. W. Freeman, Redlands	28.16
728	do Guaranteed	A. M. Seely, Covina	27.18 26.95
726	Armour's Special 5-8-2 Guaranteed	J. S. Edwards, East Highlands	28.93 27.40
582	Armour's Special Fertilizer Guaranteed	James M. Riley, Covina	33.13 30.50
619	Armour's Special Guaranteed	Factory, Colton	38.40 40.36
600	Sulfate of Potash Guaranteed	Arlington H'ghts Fruit Co., Riverside	57.94 58.04
614	Armour's Sulfate of Potash Guaranteed	Fitz, Gerald and Barry, Pasadena	58.13 57.60
656	Armour's Sulfate of Potash Guaranteed	J. W. Freeman, Redlands	58.75 60.00
552*	Armour's Tankage	Arlington H'ghts Fruit Co., Riverside	31.51
553*	do	Arlington H'ghts Fruit Co., Riverside	31.71
554*	do	Arlington H'ghts Fruit Co., Riverside	32.39
555*	do	Arlington H'ghts Fruit Co., Riverside	32.78
556*	do	Arlington H'ghts Fruit Co., Riverside	33.73
569*	do	Arlington H'ghts Fruit Co., Riverside	32.54
578*	do Guaranteed	Arlington H'ghts Fruit Co., Riverside	31.71 30.90
620*	Armour's Tankage Guaranteed	Factory, Colton	32.47 30.80

*552—84 per cent fine.

*553—76 per cent fine.

*554—77 per cent fine.

*555—79 per cent fine.

*556—77 per cent fine.

*569—75 per cent fine.

*578—78 per cent fine.

*620—70 per cent fine.

ANALYSES AND VALUATIONS—Continued.

Laboratory Number	POUNDS PER HUNDRED.												
	PHOSPHORIC ACID.				NITROGEN.					POTASH.			Chlorin
	Available	Insoluble	Total	Guaranteed as Derived From	In Nitrates	In Ammonia Salts	Organic	Organic Nitrogen Guaranteed as Derived From	Total	From Muriate	From Sulfate	Total	
716	8.07	1.19	9.29		1.68		3.06		4.74		2.91		
	8.00	2.00	10.00	Bn, G. Super	1.40		3.60	Bn, G.	5.00		3.00		
717	9.11	1.84	10.95		0.92		0.69		1.61		5.31		
	8.00	2.00	10.00	Bn, T Super	0.50		1.00	Bl, Bn, T	1.50		5.00		
718	5.00	1.57	6.57		1.35		2.44		3.79		4.11		
719	6.29	1.11	7.40		1.66		2.12		3.78		3.49		
720	5.29	0.41	5.70	Bn, G, T Super	1.50		2.00		3.50		4.13		
	4.00	1.00	5.00		1.50		2.50	Bl, Bn, G, T	4.00		4.00		
590					15.72								0.56
666					15.56								
667					15.54								
668					15.56								
					15.00								
593	9.07	2.30	11.37		1.66	0.24	1.10		3.00		4.52		
594	9.62	2.00	11.62		1.53	0.24	1.13		2.90		4.38		
630	10.68	1.12	11.80		1.80		1.15		2.95		4.73		
721	9.93	1.20	11.13		1.66		1.23		2.89		4.42		
722	9.49	1.10	10.59		1.72		1.24		2.96		4.75		
	8.00	2.00	10.00	Bn, G, T Super	1.50		1.50	Bl, Bn, G, T	3.00		4.00		
631	12.86	3.27	16.13				3.07		3.07		3.44		0.58
723	13.25	2.41	15.66				2.64		2.64		2.55		
724	10.60	4.62	15.22				2.50		2.50		2.30		
	8.00	7.00	15.00	Bn, T Super			2.50	Bl, Bn, T	2.50		2.50		
603	9.40	1.57	10.97		1.62		2.25		3.87		2.28		
615	9.00	1.54	10.54		1.60		2.34		3.94		2.34		
618	7.74	3.34	11.08		1.63		2.29		3.92		2.51		0.62
636	8.54	1.77	10.31		1.52		2.64		4.16		2.59		0.60
725	10.21	1.03	11.24		1.87		2.05		3.92		2.39		
727	9.06	0.83	9.89		1.99		2.23		4.22		1.89		
728	9.30	0.91	10.21		1.60		2.17		3.77		2.05		
	8.00	2.00	10.00	Bn, G, T Super	1.50		2.50	Bl, Bn, G, T	4.00		2.00		
726	9.02	1.31	10.33				4.12		4.12		2.18		
	8.00	2.00	10.00				4.00		4.00		2.00		
582	15.41	4.51	19.92				1.57		1.57		5.61		0.54
	12.00	7.00	19.00	Bn, Super			1.50	Bn	1.50		6.00		
619			11.27				5.03		5.03		9.40		0.64
			11.00	Bn			5.50	Bl, Bn	5.50		9.80		
600											48.28		2.68
											48.67		
614											48.44		2.02
											48.00		
656											48.96		
											50.00		
552			11.89				6.47		6.47				
553			11.34				6.66		6.66				
554			12.26				6.64		6.64				
555			13.10				6.56		6.56				
556			11.48				7.22		7.22				
569			11.60				6.84		6.84				
578			11.97				6.51		6.51				
			11.00				6.50		6.50				
620			12.50				6.61		6.61				0.56
			13.00				6.00		6.00				

ANALYSES AND VALUATIONS—Continued.

Laboratory Number	NAME AND ADDRESS OF MANUFACTURER OR DEALER, AND NAME OF BRAND.	FROM WHOM OBTAINED.	Value per Ton at Station Prices
Armour Fertilizer Works, Los Angeles, Cal.—Continued.			
621*	Armour's Tankage ----- Guaranteed -----	J. W. Freeman, Redlands -----	32.85 29.00
632*	Armour's Tankage -----	J. C. Boyd, Rialto -----	27.10
688*	do ----- Guaranteed -----	J. S. Edwards, East Highlands -----	27.21 26.50
689*	Armour's Tankage ----- Guaranteed -----	F. L. Palmer, North Pomona -----	29.90 29.30
Balfour, Guthrie & Co., San Francisco, Cal.			
669	Nitrate of Soda -----	Balfour, Guthrie & Co., San Francisco	51.61
670	do -----	M. Braughler, Santa Rosa -----	51.28
671	do ----- Guaranteed -----	Thos. G. Aitken, Reedley -----	52.07 49.50
684	Sulfate of Potash -----	Balfour, Guthrie & Co., San Francisco	57.45
685	do ----- Guaranteed -----	M. Braughler, Santa Rosa -----	59.14 57.60
686	Sulfate of Potash ----- Guaranteed -----	Beckman, Welch & Co., Lodi -----	59.76 58.30
673*	Thomas Phosphate Powder -----	Balfour, Guthrie & Co., San Francisco	17.30
674*	do -----	M. Braughler, Santa Rosa -----	17.66
676*	do -----	Thos. G. Aitken, Reedley -----	17.57
677*	do ----- Guaranteed -----	G. W. Sill, Watsonville -----	17.64 17.61
678*	Thomas Phosphate Powder ----- Guaranteed -----	N. W. Blanchard, Santa Paula -----	17.75 17.31
675*	Thomas Phosphate Powder ----- Guaranteed -----	Beckman, Welch & Co., Lodi -----	15.17 15.75
California Fertilizer Works, San Francisco, Cal.			
580	H. G. Special Ammoniated Bone Superphosphate ----- Guaranteed -----	J. D. Farwell, Los Gatos -----	33.60 28.28
729	Fruit and Vine -----	Sam Meyer, Healdsburg -----	31.36
732	do ----- Guaranteed -----	San Monte Fruit Co., Watsonville -----	30.20 26.13
730	Fruit and Vine -----	Pioneer Fruit Co., New Castle -----	30.43
731	do ----- Guaranteed -----	Fresno Home Packing Co., Fresno -----	30.78 26.48
565	Special Fruit and Vine ----- Guaranteed -----	G. W. Wyllie, Dinuba -----	27.74 24.86
584	Fruit, Orange, and Vine -----	C. W. Flanders, Porterville -----	27.94
733	do -----	Manufacturers, San Francisco -----	27.78
734	do ----- Guaranteed -----	A. G. Schultz, Porterville -----	28.53 26.20
735	Nursery Stock -----	Pioneer Fruit Co., New Castle -----	29.47
736	do ----- Guaranteed -----	San Monte Fruit Co., Watsonville -----	26.45 26.40
737	Odorless Lawn Dressing -----	Cox Seed Co., San Francisco -----	31.10
752	do ----- Guaranteed -----	Sam Meyer, Healdsburg -----	29.82 20.69

*621—67 per cent fine.
*632—73 per cent fine.
*688—78 per cent fine.

*689—80 per cent fine.
*673—73 per cent fine.
*674—69 per cent fine.
*675—79 per cent fine.

*676—74 per cent fine.
*677—76 per cent fine.
*678—78 per cent fine.

ANALYSES AND VALUATIONS—Continued.

Laboratory Number	POUNDS PER HUNDRED.												Chlorin
	PHOSPHORIC ACID.				NITROGEN.					POTASH.			
	Available	Insoluble	Total	Guaranteed as Derived From	In Nitrates	In Ammonia Salts	Organic	Organic Nitrogen Guaranteed as Derived From	Total	From Muriate	From Sulfate	Total	
621			14.16				6.33		6.33				
			15.00				5.00		5.00				
632			13.56				4.78		4.78				
688			12.76				5.00		5.00				
			14.00				4.50		4.50				
689			10.26				6.38		6.38				
			9.00				6.50		6.50				
669						15.64							
670						15.54							
671						15.78							
						15.00							
684											47.88		1.00
685											49.28		
											48.60		
686											49.80		
											48.60		
673			19.22										
674			19.62										
676			19.52										
677			19.60										
			19.57										
678			19.72										
			19.23										
675			16.86										
			17.50										
580	13.03	5.56	18.59				4.22		4.22				
	12.00	4.00	16.00				3.30		3.30				
729	8.24	2.32	10.56		0.73	0.76	1.44		2.93		8.32		
732	8.65	2.64	11.29		0.87	0.65	1.32		2.84		7.12		0.70
	6.00	3.00	9.00	Bn, T, Super	0.50		2.00	Bl, Bn, T	2.50		7.15		
730	9.08	1.71	10.79		0.67	0.67	1.19		2.53		8.14		
731	7.61	2.53	10.14		0.66	0.66	1.55		2.87		8.53		0.76
	6.50	2.50	9.00	Bn, T, Super	0.50		2.00	Bl, Bn, T	2.50		7.15		
565	7.07	4.62	11.69		0.92	0.80	1.61		3.33		4.36		
	7.00	3.00	10.00	Bn, T, Super	0.35		2.50	Bl, Bn, T	2.85		4.00		
584	5.91	3.43	9.34		0.60	0.57	1.50		2.67		8.09		1.02
733	6.70	2.77	9.47		0.70	0.59	1.21		2.50		7.97		
734	6.69	2.32	9.01		0.85	0.52	1.27		2.64		8.41		
	6.00	3.50	9.50	Bn, T, Super	0.50		2.00	Bl, Bn, T	2.50		7.00		
735	9.21	4.35	13.56		1.16	0.78	1.83		3.77		2.51		
736	7.80	3.05	10.85		1.34	0.62	1.43		3.39		3.13		
	7.00	3.00	10.00	Bn, T, Super	1.00		3.00	Bl, Bn, T	4.00		2.00		
737	11.11	4.61	15.72		3.59				3.59		3.01		
752	8.28	4.11	12.39		3.52				3.52		5.17		
			10.00	Super	3.30				3.30		1.50		

ANALYSES AND VALUATIONS—Continued.

Laboratory Number	NAME AND ADDRESS OF MANUFACTURER OR DEALER, AND NAME OF BRAND.	FROM WHOM OBTAINED.	Value per Ton at Station Prices
California Fertilizer Works, San Francisco—Continued.			
738	Orange Tree Guaranteed	William Calder, Folsom	28.84 26.08
596	Orange Tree, B Guaranteed	J. H. Williams, Porterville	32.41 27.34
739	Special Orange Tree Guaranteed	W. J. Benjamin, Riverside	33.55 29.38
740	Peach	Pioneer Fruit Co., New Castle	31.02
741	do Guaranteed	San Monte Fruit Co., Watsonville	29.35 24.68
651	Special Phosphate and Potash Guaranteed	Judson House, Riverside	29.45 29.45
742	Special Phosphate and Potash	R. Wilson, Los Gatos	24.87
597	do Guaranteed	J. H. Williams, Porterville	25.40 22.60
595	Special High Grade Guaranteed	W. E. Sprott, Porterville	31.69 29.05
790	Special Guaranteed	Hearst Estate, Palermo	28.33 27.40
616	Truck and Berry	E. L. Smith, Yuba City	29.08
743	do	R. N. Kells, Yuba City	28.61
744	do Guaranteed	San Monte Fruit Co., Watsonville	28.44 24.75
Cudahy Packing Co., So. Omaha, Neb.			
557*	Cudahy's Blood and Bone	Arlington H'ghts Fruit Co., Riverside	27.96
558*	do	Arlington H'ghts Fruit Co., Riverside	29.39
576*	do Guaranteed	Arlington H'ghts Fruit Co., Riverside	28.88 27.90
601*	Tankage	Arlington H'ghts Fruit Co., Riverside	29.82
602*	do Guaranteed	Arlington H'ghts Fruit Co., Riverside	30.01 29.23
R. A. Holcombe & Co., San Francisco, Cal.			
672	Nitrate of Soda Guaranteed	R. A. Holcombe & Co., San Francisco	50.16 51.65
Maler Fertilizer Co., Los Angeles, Cal.			
654	"A. A."	G. W. Joslin, North Pomona	29.40
661	do Guaranteed	A. Ingram, Pomona	29.25 32.00
657	"A. A." Guaranteed	Levi Bemis, Rialto	31.41 31.50
695*	"T" Guaranteed	Levi Bemis, Rialto	26.09 22.80
Mapes Formula and P. G. Co., New York.			
745	Mapes Orange Tree Manure Guaranteed	J. J. Prendergast, Redlands	23.89 22.92

*557—84 per cent fine.

*558—86 per cent fine.

*576—80 per cent fine.

*601—81 per cent fine.

*602—83 per cent fine.

*695—72 per cent fine.

ANALYSES AND VALUATIONS—Continued.

Laboratory Number	POUNDS PER HUNDRED.														
	PHOSPHORIC ACID.				NITROGEN.					POTASH.			Chlorin		
	Available	Insoluble	Total	Guaranteed as Derived From	In Nitrates	In Ammonia Salts	Organic	Organic Nitrogen Guaranteed as Derived From	Total	From Muriate	From Sulfate	Total			
738	7.12	1.44	8.56	Bn, T, Super	1.82	0.36	0.97	Bl, Bn, T	3.15		7.31				
	5.00	2.00	7.00				3.30				3.30			6.00	
596	8.52	3.37	11.89				1.35		0.75		2.10			10.79	0.62
	7.00	2.00	9.00				0.85		0.85		1.65			10.00	
739	10.23	3.50	13.73			0.98	0.58		1.34		2.90			7.82	
	8.00	2.50	10.50			0.85			2.00		2.85			7.10	
740	8.59	2.40	10.99			0.69	0.62		1.17		2.48			8.99	
741	6.26	2.49	8.75			0.96	0.61		1.12		2.69			9.32	
	6.00	2.50	8.50			0.50			2.00		2.50			7.25	
651	14.32	4.06	18.38											8.53	
	13.50	2.50	16.00							10.00					
742	9.59	3.66	13.25							9.61					
597	9.05	2.31	11.36					0.20		10.56					
	8.00	2.00	10.00							10.00					
595	6.35	2.19	8.54	Bn, T, Super	0.65	0.58	1.18	Bl, Bn, T	2.41		12.07	0.68			
	6.00	2.00	8.00			0.50			2.00	2.50			10.00		
790	11.30	2.90	14.20						3.70	3.70			0.79		
	10.00	2.00	12.00						4.00	4.00					
616	9.92	2.02	11.94		0.66	0.87	1.34	2.87		5.06	0.82				
743	8.70	3.50	12.20		0.78	0.86	1.27	2.91		5.15	0.90				
744	8.22	2.55	10.77		0.85	0.67	1.16	2.68		6.58	0.70				
	7.00	3.00	10.00		0.50	2.00		2.50		5.00					
557	4.58	9.35	13.93				5.23	5.23			0.74				
558	3.74	8.04	11.78				6.14	6.14			0.70				
576	5.47	6.95	12.42				5.54	5.54							
	7.00	5.00	12.00				5.00	5.00							
601			14.66				5.32	5.32							
602			15.08				5.28	5.28							
			13.80				5.35	5.35							
672					15.20										
					15.65										
654	11.87	3.42	15.29				3.56	3.56		0.52					
661	10.94	4.18	15.12				3.75	3.75		0.44					
	8.00	4.00	12.00	Bn, T			5.00	5.00	Bl, Bn, T	5.00	2.00				
657	8.76	4.49	13.25				4.80	4.80		1.14					
	7.00	5.00	12.00	Bn, T			5.00	5.00	Bl, Bn, T	5.00	2.00				
695	6.77	7.32	14.09				4.21	4.21							
	8.00	6.00	14.00	Bn, T			3.00	3.00	Bl, Bn, T	3.00					
745	6.72	2.13	8.85		1.91	0.43	0.86	3.20		3.18	1.70				
	6.00	2.00	8.00	Bn, G	2.40	0.15	0.74	3.29	G, Bn	3.00					

ANALYSES AND VALUATIONS—Continued.

Laboratory Number	NAME AND ADDRESS OF MANUFACTURER OR DEALER, AND NAME OF BRAND.	FROM WHOM OBTAINED.	Value per Ton at Station Prices
	S. M. Neely, San Diego.		
746	Bird Guano ----- Guaranteed -----	S. M. Neeley -----	26.01 38.17
	Nelson, Morris & Co., Chicago.		
559*	Big Two ----- Guaranteed -----	Arlington H'ghts Fruit Co., Riverside	32.32 29.44
696*	Big Two ----- Guaranteed -----	L. G. Haight, Redlands	30.52 30.90
747*	Big Three ----- Guaranteed -----	L. G. Haight, Redlands	23.36 18.90
748*	Big Four ----- Guaranteed -----	Wilcox, Rose Co., Colton	34.20 28.85
749	Big Five ----- Guaranteed -----	Wilcox, Rose Co., Colton	21.34 17.70
750*	Big Six ----- Guaranteed -----	Wilcox, Rose Co., Colton	25.44 25.75
793*	Big Eight ----- Guaranteed -----	C. H. Lowe, Riverside	32.87 30.00
570	Dried Blood -----	Arlington H'ghts Fruit Co., Riverside	47.88
617	do ----- Guaranteed -----	L. S. Plateau, Redlands	46.92 48.10
652*	Steamed Bone Meal ----- Guaranteed -----	C. H. Lowe, Riverside	33.82 30.00
571*	Tankage -----	T. C. Wallace, Riverside	34.34
564*	do -----	W. W. Moore, Redlands	33.59
581*	do -----	W. W. Moore, Redlands	34.17
622*	do ----- Guaranteed -----	Ed Roberts, Colton	30.96 33.30
585*	Tankage ----- Guaranteed -----	Arlington H'ghts Fruit Co., Riverside	33.13 33.36
658*	Tankage -----	Mrs. B. K. Fox, Pomona	36.70
660*	do ----- Guaranteed -----	Thos. C. Wallace, Riverside	36.48 37.55
659*	Tankage ----- Guaranteed -----	C. L. Merryfield, Colton	32.76 36.70
	Oakland Meat Co., Stock Yards, Cal.		
697*	Special Fertilizer ----- Guaranteed -----	Manufacturers -----	32.07 30.00
	Pacific Bone, Coal and Fertilizer Co., San Francisco, Cal.		
773*	Pure Bone Meal ----- Guaranteed -----	Cox Seed & Plant Co., San Francisco	29.35 26.95
756	Special ----- Guaranteed -----	Schnabel Bros., New Castle	33.23 29.78
751	Ceres ----- Guaranteed -----	E. L. Rippey, Loomis	30.89 25.35

*559—67 per cent fine.

Small amount of hoof.

*696—65 per cent fine.

*747—51 per cent fine.

*748—60 per cent fine.

Contains considerable hoof.

*793—75 per cent fine.

*652—69 per cent fine.

*571—90 per cent fine.

*564—86 per cent fine.

*581—91 per cent fine.

*622—89 per cent fine.

*585—85 per cent fine.

*750—81 per cent fine.

*658—62 per cent fine.

Contains considerable hoof.

*660—65 per cent fine.

Contains considerable hoof.

*659—63 per cent fine.

Contains considerable hoof.

*697—75 per cent fine.

*773—53 per cent fine.

ANALYSES AND VALUATIONS—Continued.

Laboratory Number	POUNDS PER HUNDRED.												
	PHOSPHORIC ACID.				NITROGEN.					POTASH.			Chlorin
	Available	Insoluble	Total	Guaranteed as Derived From	In Nitrates	In Ammonia Salts	Organic	Organic Nitrogen Guaranteed as Derived From	Total	From Muriate	From Sulfate	Total	
746	7.07	0.73	7.80		0.51	1.98	1.94		4.43		1.14		1.18
	8.86	1.10	9.96		0.63	1.67	4.67		6.97		1.74		
559			25.52				3.50		3.50				
			28.00				2.06		2.06				
696			27.28				2.56		2.56				
			28.00				2.50		2.50				
747			11.36				2.98		2.98		3.45		
			10.00				2.50		2.50		2.00		
748			12.74				4.95		4.95		5.98		
			12.00				4.25		4.25		4.00		
749			11.24				3.20		3.20		1.22		
			10.00				2.50		2.50		1.00		
750			25.98				1.37		1.37				
			29.00				0.75		0.75				
793			25.70				2.51		2.51		3.15		
			23.00				2.00		2.00		4.00		
570							12.94		12.94				
617							12.68		12.68				
							13.00		13.00				
652			23.32				3.45		3.45		2.86		
			23.00				2.00		2.00		4.00		
571			17.46				5.99		5.99				
564			16.82				5.92		5.92				
581			17.76				5.87		5.87				
622			13.93				5.83		5.83				
			14.00				6.50		6.50				
585			11.57				7.02		7.02				
			13.74				6.58		6.58				
658			7.25				9.09		9.09				
660			7.39				8.99		8.99				
			5.50				9.75		9.75				
659			5.89				8.25		8.25				
			5.50				9.50		9.50				
697			14.62				5.99		5.99				
			12.00	Bn, T			6.00	Bl, Bn, T	6.00				
773			23.55				3.09		3.09				
			22.00				2.75		2.75				
756	8.28	0.10	8.38				3.73		3.73		9.11		0.90
	7.00			Bn, Super			3.75	Bn	3.75		7.50		
751	11.16	0.66	11.82				2.13		3.06		5.66		
	7.00	3.00	10.00				1.50		2.75		5.00		

ANALYSES AND VALUATIONS—Continued.

Laboratory Number	NAME AND ADDRESS OF MANUFACTURER OR DEALER, AND NAME OF BRAND.	FROM WHOM OBTAINED.	Value per Ton at Station Prices
Pacific Bone, Coal, and Fertilizer Co., San Francisco, Cal.—Continued.			
754	Lupine	Schnabel Bros., Newcastle	24.35
	Guaranteed		23.30
753	Pomona	Schnabel Bros., Newcastle	32.55
755	do	A. Ryder, Bloomis	34.38
	Guaranteed		29.65
Swift & Co., Chicago.			
560	Swift's Dried Blood	Arlington H'gts Fruit Co., Riverside	53.28
561	do	Arlington H'gts Fruit Co., Riverside	52.84
562	do	Arlington H'gts Fruit Co., Riverside	53.47
563	do	Arlington H'gts Fruit Co., Riverside	53.28
	Guaranteed		51.80
574	Dried Blood	Wm. Buxton, Rialto	50.95
681	do	E. L. Koethen, Riverside	50.14
682	do	Geo. Griffiths, Covina	49.50
	Guaranteed		48.10
572*	Special Bone Meal	Wm. Buxton, Rialto	29.66
587*	do	Geo. H. Engelhard, Los Angeles	29.93
605*	do	C. W. La Ferta, Glendora	28.59
774*	do	E. L. Koethen, Riverside	29.81
775*	do	Geo. Griffiths, Covina	30.17
	Guaranteed		25.99
776	Swift's Diamond B	H. E. Bartlett, Upland	31.07
	Guaranteed		29.09
777*	Swift's Diamond C	H. E. Bartlett, Upland	30.12
	Guaranteed		28.40
573*	Diamond E	A. A. Cox, San Bernardino	31.14
575*	do	Wm. Buxton, Rialto	31.57
586	do	Clock Bros., Redlands	31.70
606*	do	W. P. Hill, Glendora	30.52
778*	do	Carroll B. Smith, Redlands	32.21
779*	do	E. L. Koethen, Riverside	32.24
780*	do	E. L. Koethen, Riverside	30.91
781*	do	Carroll B. Smith, Redlands	30.94
	Guaranteed		32.00
607	Diamond G	J. P. Engelhard, Glendora	33.35
757*	do	H. E. Bartlett, Upland	32.61
758*	do	E. L. Koethen, Riverside	34.19
	Guaranteed		32.90
604*	Special for L. P. Stewart, <i>et al.</i>	Carroll B. Smith, Redlands	37.27
	Guaranteed		38.74
679*	Thomas Phosphate Powder	Carroll B. Smith, Redlands	17.82
	Guaranteed		17.31
Union Fertilizer Company, Los Angeles, Cal.			
683	Dried Blood	E. E. Cole, Redlands	47.06
	Guaranteed		44.40
782*	Bone Meal	J. W. Freeman, Upland	28.80
783*	do	C. A. Miller, Highlands	30.56
	Guaranteed		26.10

*572—60 per cent fine.

*587—62 per cent fine.

*605—55 per cent fine.

*774—54 per cent fine.

*775—62 per cent fine.

*777—58 per cent fine.

*573—78 per cent fine.

*575—77 per cent fine.

*606—80 per cent fine.

*778—89 per cent fine.

*779—85 per cent fine.

*780—71 per cent fine.

*781—79 per cent fine.

*757—80 per cent fine.

*758—77 per cent fine.

*604—76 per cent fine.

*679—77 per cent fine.

*782—24 per cent fine.

*783—38 per cent fine.

ANALYSES AND VALUATIONS—Continued.

Laboratory Number	POUNDS PER HUNDRED.												Chlorin	
	PHOSPHORIC ACID.				NITROGEN.					POTASH.				
	Available	Insoluble	Total	Guaranteed as Derived From	In Nitrates	In Ammonia Salts	Organic	Organic Nitrogen Guaranteed as Derived From	Total	From Muriate	From Sulfate	Total		
754	11.10	0.05	11.15										9.17	
	9.00	1.00	10.00										10.00	
753	8.33	0.18	8.51		1.46	0.74	0.66		2.86				10.50	
755	9.46	1.31	10.77		1.87		1.22		3.09				9.84	
	6.00	2.00	8.00	Bn, T Super	1.50		1.25	Bl, Bn, T	2.75				10.00	
560							14.40		14.40					
561							14.28		14.28					
562							14.45		14.45					
563							14.40		14.40					
							14.00		14.00					
574							13.77		13.77					
681							13.55		13.55					
682							13.38		13.38					
							13.00		13.00					
572			30.24				1.61		1.61					
587			29.12				1.95		1.95					
605			28.18				1.78		1.78					
774			28.04				2.17		2.17					
775			29.42				1.95		1.95					
			29.00				0.82		0.82					
776	15.03	5.69	20.72				2.83		2.83					
	16.00	2.00	18.00	Bn, T,			2.47	Bl, Bn, T	2.47					
777			26.94	Bn,			2.52		2.52					
			25.00	Bn			2.47	Bn	2.47					
573			19.62				4.54		4.54					
575			20.34				4.50		4.50					
586			19.01				4.85		4.85					
606			19.79				4.35		4.35					
778			19.52				4.88		4.88					
779			19.39				4.92		4.92					
780			20.03				4.38		4.38					
781			20.11				4.37		4.37					
			19.00	Bn, T			4.94	Bl, Bn, T	4.94					
607			19.51				3.20		3.20				5.19	2.06
757			20.44				3.41		3.41				3.32	
758			19.67				3.36		3.36				5.29	2.08
			19.00	Bn, T			3.25	Bl, Bn, T	3.25				5.00	
604	10.53	6.86	17.39				4.03		4.03				5.58	0.64
	12.00	5.00	17.00	Bn, T			4.40	Bl, Bn, T	4.40				5.00	
679			19.80											
			19.23											
683							12.72		12.72					
							12.00		12.00					
782			19.14				3.97		3.97					
783			24.22				3.29		3.29					
			22.00				2.50		2.50					

ANALYSES AND VALUATIONS—Continued.

Laboratory Number	NAME AND ADDRESS OF MANUFACTURER OR DEALER, AND NAME OF BRAND.	FROM WHOM OBTAINED.	Value per Ton at Station Prices
Union Fertilizer Company, Los Angeles, Cal.—Continued.			
784*	Bone Meal	J. W. Freeman, Upland	27.70
	Guaranteed		24.40
633	Fruiting	N. L. May, Rialto	25.06
759	do	E. E. Cole, Redlands	24.64
760	do	H. H. Gardener Co., Anaheim	30.49
761	do	C. A. Miller, Highlands	26.86
	Guaranteed		24.18
662	Special Fruiting	L. C. Waite, Riverside	26.33
762	do	E. E. Cole, Redlands	31.69
	Guaranteed		29.50
763	Nursery	J. W. Freeman, Upland	26.77
	Guaranteed		27.70
764	Orange and Lemon	J. B. Hanna, Colton	22.68
	Guaranteed		20.62
765	Special	J. F. Jackson, Riverside	29.55
	Guaranteed		29.00
766	Special	J. F. Jackson, Riverside	27.32
	Guaranteed		29.20
767	Special	J. W. Freeman, Upland	26.21
	Guaranteed		27.53
768	Special	J. W. Freeman, Upland	26.99
	Guaranteed		29.40
769	Special	J. W. Freeman, Upland	30.31
	Guaranteed		29.59
786	Special	J. F. Jackson, Riverside	30.02
	Guaranteed		31.18
Western Meat Company, San Francisco, Cal.			
785*	W. M. Co. Tankage	Manufacturers	35.48
	Guaranteed		33.65
Woodbridge Chemical Works, San Bernardino, Cal.			
770	Woodbridge Citrus B	Factory	20.78
771	do	Factory	19.07
	Guaranteed		21.10
772	Woodbridge Special Citrus B	Factory	24.62
	Guaranteed		20.50
623	Woodbridge Orange and Lemon No. 1	C. N. Ross, Etiwanda	31.06
	Guaranteed		28.90
789	Woodbridge Orange and Lemon No. 1	B. K. Brant, Upland	32.60
	Guaranteed		28.30
608	Nitrate of Soda	J. S. Kuns, Covina	51.68
	Guaranteed		51.15
787	Special	S. E. Gilbert, Colton	25.92
	Guaranteed		26.20
Commercial Industrial Manufactur- ing Co., Los Angeles.			
609*	Sheep Manure and Gypsum	L. C. Whaley, Redlands	

*784—33 per cent fine. *609—Not registered. Contains 14.35 per cent gypsum.

*785—82 per cent fine.

ANALYSES AND VALUATIONS—Continued.

Laboratory Number	POUNDS PER HUNDRED.											
	PHOSPHORIC ACID.				NITROGEN.				POTASH.			Chlorin
	Available	Insoluble	Total	Guaranteed as Derived From	In Nitrates	In Ammonia Salts	Organic	Organic Nitrogen Guaranteed as Derived From	Total	From Muriate	From Sulfate	
784			18.48				3.80		3.80			
			22.00				2.00		2.00			
633	7.93	1.17	9.10		0.35	0.83	1.79		2.79		3.65	1.94
759	7.91	0.71	8.62		0.15	0.99	1.90		3.04		3.24	1.10
760	8.77	2.59	11.36		0.38	1.20	2.47		4.05		3.51	1.48
761	8.63	0.98	9.61		0.36	0.93	1.70		2.99		4.46	1.24
	7.00	2.00	9.00	Bn, G, T Super	0.75	0.60	1.65	Bn, G, T	3.00		3.50	
662	7.86	0.11	7.97		2.23	0.26	1.01		3.54		4.09	5.94
762	9.44	1.43	10.87		0.38	1.45	2.09		3.92		4.71	1.56
	8.00	2.00	10.00	Bn, G, T Super	1.00	0.75	2.25	Bn, G, T	4.00		4.00	
763	6.23	1.2	7.44		2.44	0.29	1.97		4.70		2.08	4.64
	6.00	2.00	8.00	Bn, G, T Super	1.00	1.00	3.00	Bn, G, T	5.00		1.50	
764	7.97	1.06	9.03		0.33	0.83	1.36		2.52		3.01	1.24
	7.00	2.00	9.00	Bn, G, T Super	0.60	0.50	1.40	Bn, G, T	2.50		2.00	
765			8.48		0.55	1.82	4.00		6.37			
			7.00	Bn, G, T Super				Bn, G, T	6.50			
766	11.45	1.88	13.33		0.72	0.41	1.14		2.27		3.90	
	12.00	2.00	14.00	Bn, G, T Super				Bn, G, T	2.40		4.50	
767	8.17	1.28	9.45				4.09		4.09		0.87	0.82
	8.15	1.30	9.45	Bn, G, T Super				Bn, G, T	4.25		1.50	
768	12.97	2.13	15.10		0.46	0.35	0.89		1.70		3.65	
	15.00	1.00	16.00	Bn, G, T Super				Bn, G, T	1.40		5.00	
769	13.90	2.42	16.32		0.61	0.36	1.05		2.02		4.44	0.58
	13.55	2.68	16.23	Bn, G, T Super				Bn, G, T	1.71		5.00	
786	14.67	2.27	16.94		0.56	0.25	0.86		1.67		4.52	
	14.25	2.75	17.00	Bn, G, T Super				Bn, G, T	1.57		6.00	
785			8.74				8.38		8.38			
			7.00				8.25		8.25			
770	5.20	3.25	8.45				2.12		2.12		4.40	
771	8.60	1.84	10.44				0.88		0.88		3.88	
	5.00	5.00	10.00	Bn, G			2.50	Bl, Bn, G	2.50		3.00	
772	6.51	5.27	11.78				2.47		2.47		4.40	
	5.00	5.00	10.00	Bn, G			2.00	Bl, Bn, G	2.00		4.00	
623	6.07	4.71	10.78				3.90		3.90		6.16	
	5.00	5.00	10.00	Bn, G			4.00	Bl, Bn, G	4.00		5.00	
789	9.89	1.25	11.14		3.56		0.62		4.18		5.10	2.48
	5.00	5.00	10.00	Bn, G	2.00		2.00	Bl, Bn, G	4.00		5.00	
608					15.54							0.60
					15.50							
787	6.57	3.36	9.93				3.14		3.14		4.21	
	8.00	2.00	10.00	Bn, Super			3.00	Bl, Bn	3.00		4.00	
609			0.73				0.62		0.62		0.27	

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- 1900. Report of the Agricultural Experiment Station for the year 1897-98.
- 1902. Report of the Agricultural Experiment Station for 1898-1901.
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